METHOD AND SYSTEM FOR EFFICIENT AND ACCURATE PROCESSING OF A DISCRETE TIME INPUT SIGNAL

ABSTRACT

A method and system of accurately processing a discrete time input signal having a first clock rate into a discrete time output signal having a second clock rate is presented. The method includes delta filtering the input signal to produce an intermediate signal having the first clock rate and delta interpolating the intermediate signal to produce the output signal. Delta filtering includes calculating an input delta signal by subtracting an initial value from the input signal, generating a filtered delta signal, and adding the initial value to the filtered delta signal. Delta interpolating includes upsampling the intermediate signal to the second clock rate, calculating an upsampled intermediate delta signal by subtracting an initial value from the upsampled intermediate signal, filtering the intermediate delta signal, and adding the initial value to the filtered intermediate delta signal. The method reduces the number of required operations and reduces computational errors in the filtering and interpolation of discrete input signals.

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